

Review of the Pseudoscorpion Fauna of China (Arachnida: Pseudoscorpionida)

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Review of the Pseudoscorpion Fauna of China (Arachnida: Pseudoscorpionida). - The known pseudoscorpions from China (including Tibet, excluding Mongolia and Taiwan) and new material are compiled. 47 species are listed, remarks on taxonomy and distribution are added. New species: *Centrochthonius sichuanensis* n.sp., *Stenohya chinacavernicola* n.sp. New records for China: *Lagynochthonius tonkinensis*, *Tyrannochthonius japonicus*, *Tyrannochthonius pachythorax*, *Tyrannochthonius robustus*, *Ditha proxima*, *Geogarypus javanus*, *Bisetocreagris annamensis*, *Bisetocreagris indochinensis*, *Bisetocreagris thailandica*, *Bisetocreagris* cf. *ussuriensis* (only a single tritonymph), *Microbisium brevifemuratum*, *Anatemnus orites*, *Chernes hahni*, *Allochernes tropicus* n.comb., *Lamprochernes savignyi*, *Megachernes* cf. *titanus*, *Megachernes* cf. *vietnamensis*, *Verrucachernes oca*, *Hyperwithius tonkinensis*.

Key-words: Arachnida - Pseudoscorpiones - China - Review - Taxonomy.

INTRODUCTION

Although China covers a huge area within the Palaearctic and Oriental region, only few records of pseudoscorpions are scattered in different papers (see citations in the catalogue of HARVEY 1990). New collections at my disposal from that country, mostly from the southern provinces, induced me to prepare a review of all known pseudoscorpions (47 species) from China. It is not the purpose of this paper to figure all morphological details of all species and/or to provide an identification key. Of course this compilation is only a first step and far away from completeness. Some series (for example in *Bisetocreagris*, *Megachernes*) remained unidentified or can be determined only with some doubts. Further knowledge of pseudoscorpion taxonomy and further investigations with special collecting techniques in vast and remote areas of China may enlarge this first review in many aspects.

The Chinese pseudoscorpion fauna is composed of different elements. Records from southern tropical and subtropical regions show a closer relation to the fauna of Indochina (REDIKORZEV 1938, BEIER 1951), Thailand (SCHAWALLER 1994) and Nepal (SCHAWALLER 1991). The fauna of the northeastern provinces has a palaeartic character similar to eastern Siberia (SCHAWALLER 1995). The species from the northwestern arid regions of China might have affinities with the Mongolian fauna. The pseudoscorpions from Korea have been treated recently (HONG & KIM 1993, KIM & HONG 1994).

In this review, "China" covers the area of the Peoples Republic of China including Tibet, but without Mongolia and Taiwan.

Not included in this review are: *Microcreagris japonica* Ellingsen, 1907 from Japan, which was recorded by CHAMBERLIN (1930) from China: Chofu; this seems to be an error, because Chofu is a city near Tokyo. CHAMBERLIN (1930) described 3 further species of "*Microcreagris*" with doubtful origin, which are treated here as nomina dubia. *Geogarypus irrugatus* (Simon, 1899) was recorded from China (Amoy = Xiamen) by CHAMBERLIN (1930); the genus needs a revision and probably the herein recorded species *javanus* (Tullgren, 1905) is a synonym of *irrugatus* (Simon, 1899).

MATERIAL

CGG	Collection G. Gardini, Genova.
MHNG	Muséum d'Histoire Naturelle, Genève.
MSF	Museo La Specola, Firenze.
MSNV	Museo Civico di Storia Naturale, Verona.
SMNS	Staatliches Museum für Naturkunde, Stuttgart.
ZISB	Zoological Institute of the Academia Sinica, Beijing.

SPECIES LIST

Chthoniidae (7 species)

1. *Centrochthonius kozlovi* (Redikorzev, 1918) (Fig. 6)

Material: Not seen.

Remarks: The single specimen published from Nepal is not a tritonymph, but an adult male, thus in the figures given in SCHAWALLER (1991) two additional trichothria are missing.

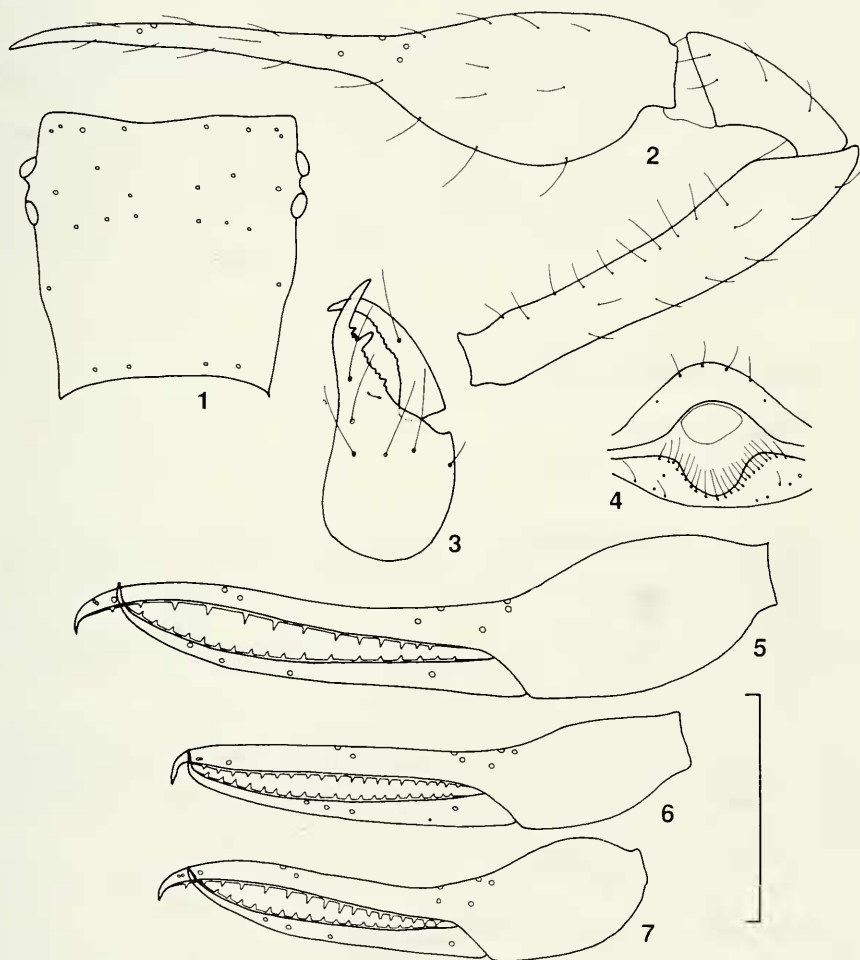
Distribution: Tibet (locus typicus), Nepal Himalayas.

2. *Centrochthonius sichuanensis* n.sp. (Figs 1-5)

Holotype (♂): China, Sichuan Prov., Wolong Nature Reserve, 1500 m, 21.V.1994, MHNG.

Paratypes: Together with holotype, 1 ♂ 3 ♀ MHNG. Sichuan Prov., Wolong Nature Reserve, 1700 m, 18.V.1994, 2 ♂ MHNG. Sichuan Prov., Wolong Nature Reserve, 1000 m, 24.V.1994, 2 ♂ 1 ♀ SMNS 3509. Sichuan Prov., Mt. Emei, 1500 m, 21.IX.1994, 1 ♀ MHNG.

Description (δ): Carapace (Fig. 1) (0.57/0.59 mm) with the basal margin somewhat narrower than the anterior margin, anterior margin without epistome, each side with 2 distinct lense eyes; carapace with 26 setae, anterior margin with 8 (4 long and on each side with 2 shorter) setae, basal margin with 4 setae. Setation on tergites 4-8-9-8-10-10-10-8-8-6-4, setation around the genital opercula see Fig. 4. Palpal coxa with 3 setae, coxa I with 1+4 setae and with 9-10 serrate coxal spines on a single socle, coxa II with 2+3 setae, coxa III with 3+3 setae, coxa IV with 4+3 setae.



FIGS 1-7

Centrochthonius sichuanensis n.sp. holotype male (1-5), *C. kozlovi* from Nepal (6) and *C. ussuriensis* from Siberia (7); scale 0.5 mm. - 1: Carapace; 2: Palp from dorsal; 3: Chelicera; 4: Setation around genital opercula; 5-7: Palpal chela from lateral.

Chelicera (Fig. 3): 6 setae on the hand, movable finger with 1 seta; flagellum with 8 feathered blades; serrula exterior with 22, serrula interior with 17 blades; fixed finger with a striking long tooth and distally with additional 3 teeth, movable finger with a row of indistinct teeth. Palp (Figs 2, 5): Femur (1.00/0.18 mm) 5.6x, patella (0.45/0.18 mm) 2.5x, chela without pedicel (1.55/0.33 mm) 4.7x longer than wide; finger 1.6x longer than hand; trichobothriotaxie see Fig. 5; fixed finger with 13 erect and acute teeth, movable finger with 18 erect and acute teeth. Leg IV: Tibia 0.66 mm, basitarsus 0.34 mm, telotarsus 0.64 mm long; basitarsus and telotarsus each with a long seta distally. Body length 2.6 mm.

Description (♀): No distinct sexual dimorphism. Palp: Femur (1.10/0.20 mm) 5.5x, patella (0.50/0.20 mm) 2.5x, chela without pedicel (1.74/0.42 mm) 4.15x longer than wide; finger 1.3x longer than hand. Body length 3.0 mm.

Discussion: The new material from China distinctly differs from the 3 known species of that genus (*kozlovi* (Redikorzev, 1918), *schnitnikovi* (Redikorzev, 1934) and *ussuriensis* Beier, 1979) by the combination of the following characters: striking body size, the absence of an epistome, the high number of setae on the carapace, few and distant teeth on the palpal chela (Figs 5-7) and the striking tooth on the fixed cheliceral finger.

3. *Lagynochthonius sinensis* (Beier, 1967)

Material: Not seen.

Distribution: China (Hupeh).

4. *Lagynochthonius tonkinensis* (Beier, 1951)

Material: Zhejiang Prov., Mt. Tianmu, 5.IX.1989, 8 ex. ZISB, 3 ex. SMNS 2898. Yunnan Prov., Xishuangbanna, IV.-VII.1993, 110 ex. ZISB, 5 ex. SMNS 3427, 6 ex. SMNS 3429. Yunnan Prov., Mengleng Tropical Garden, 9.IV.1992, 22 ex. ZISB, 4 ex. SMNS 3437. Yunnan Prov., Mengla-Mengleng, 10.IV.1992, 6 ex. ZISB. Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 4 ex. MHNG.

Remarks: These specimens possess the same chelal proportions and dentations as material from Thailand (SCHAWALLER 1994); the chelal hand has about the same length as the fingers. In the previous congener *sinensis* the hand is significantly shorter.

Distribution: Vietnam (locus typicus), Thailand, China (new records).

5. *Tyrannochthonius japonicus* (Ellingsen, 1907)

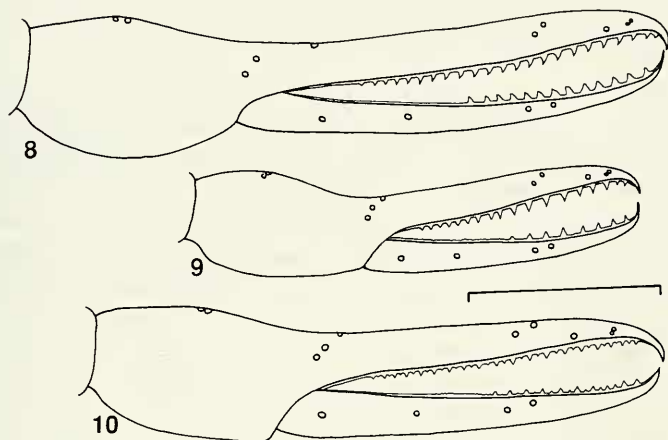
(Fig. 8)

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 1 ex. ZISB, 1 ex. SMNS 3431. Yunnan Prov., Mengleng Tropical Garden, 9.IV.1992, 2 ex. SMNS 3439.

Remarks: Both males and females have a very distinct epistome and a dentation on the palpal fingers (Fig. 8), which is characteristic for *japonicus* (SATO 1979). The genus *Tyrannochthonius* urgently needs revision to clarify, which characters are

species-specific and which are not. The species differs significantly from the both following congeners, which have no distinct epistomes and a different chelal dentation (Figs 9-10).

Distribution: Japan (*locus typicus*), Taiwan, China (new records).



FIGS 8-10

Palpal chela from lateral, scale 0.2 mm. - 8: *Tyrannochthonius japonicus*, SMNS 3431; 9: *Tyrannochthonius pachythorax*, SMNS 3428; 10: *Tyrannochthonius robustus*, SMNS 2897.

6. *Tyrannochthonius pachythorax* Redikorzev, 1938

(Fig. 9)

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 19 ex. ZISB. 3 ex. SMNS 3428, 3 ex. SMNS 3430. Yunnan Prov., Kunming, 4.IV.1992, 2 ex. ZISB. Yunnan Prov., Mengleng Tropical Garden, 9.IV.1992, 2 ex. ZISB. Yunnan Prov., Mengla-Mengleng, 10.IV.1992, 1 ex. ZISB. Yunnan Prov., Mengla, 10.IV.1992, 1 ex. SMNS 3440. Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 2 ex. MHNG. Yunnan Prov., Kunming, montagne de l'ouest (Xi Shan), 17.IV.1982, leg. M. Freiburghaus, 3 ex. MHNG. Sichuan Prov., Wolong Nature Reserve, 1500 m, 21.V.1994, 2 ex. MHNG. Sichuan Prov., Wolong Nature Reserve, 1700 m, 18.V.1994, 1 ex. MHNG. Fujian Prov., Mt. Wuyi, 31.VII.-13.VIII.1983, leg. H.F. Wang, 5 ex. ZISB, 2 ex. SMNS 3444.

Remarks: Dentation on palpal fingers of the Xishuangbanna specimens see Fig. 9. The length of the palpal fingers and the number of the teeth are variable to a certain extent but without distinct differences, thus I hope not to fail in assigning all series to a single species.

Distribution: Vietnam (*locus typicus*), Cambodia, Thailand (SCHAWALLER 1994), China (new records).

7. *Tyrannochthonius robustus* Beier, 1951

(Fig. 10)

Material: Zhejiang Prov., Mt. Tianmu, V.-IX.1987, 36 ex. ZISB, 6 ex. SMNS 2896. Hunan Prov., Mt. Hengshan, 1988, 1 ex. SMNS 2897. Sichuan Prov., Wolong Nature Reserve, 1000 m, 24.V.1994, 2 ex. MHNG. Sichuan Prov., Wolong Nature Reserve, 1500 m, 21.V.1994, 6 ex. MHNG, 3 ex. SMNS 3502. Sichuan Prov., Wolong Nature Reserve, 1700 m, 18.V.1994, 9 ex. MHNG. Sichuan Prov., Mt. Emei, 1500 m, 21.IX.1994, 5 ex. MHNG, 2 ex. SMNS 3508. Sichuan Prov., Mt. Emei, 1800 m, 24.IX.1994, 6 ex. MHNG. Sichuan Prov., Dege County, 3500 m, 14.VIII.1983, leg. H.F. Wang, 1 ex. ZISB. Shaanxi Prov., E Xian, Mt. Huashan, 1000 m, 9.-11.V.1994, 2 ex. MHNG. Beijing, no date, leg. H.F. Wang, 1 ex. ZISB, 1 ex. SMNS 3442. Beijing, 18.IX.1985, leg. H.F. Wang, 2 ex. ZISB.

Remarks: The pedipalp chela has a heterodentate dentation on both fingers (Fig. 10), which is characteristic for this species. An epistome is lacking, in contrary to the type material which is said to have a small epistome. The above cited specimens possess on the medial side of the chelal hand a spine-like seta, which is also figured by HARVEY (1988) for other congeners from the Krakatau Islands. Such a thicker seta is lacking (or broken ?) in the preceding 2 species from China. Probably this is a character which could help in a natural classification of the genus *Tyrannochthonius*.

Distribution: Vietnam (locus typicus), China (new records).

Tridenchthoniidae (1 species)

8. *Ditha proxima* (Beier, 1951)

Material: Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 3 ex. MHNG, 1 ex. SMNS 3504.

Remarks: These specimens have the palpal chela somewhat more slender than Himalayan populations (nearly as in *laosana* Beier, 1951), but all other characters show no differences (for example: trichobothrium *st* closer to *sb* and not just in the middle between *sb* and *t* as in *laosana*).

Distribution: Vietnam, Thailand, Bhutan, Nepal, China (new record).

Geogarypidae (1 species)

9. *Geogarypus javanus* (Tullgren, 1905)

Material: Yunnan Prov., Kunming, montagne de l'ouest (Xi Shan), 17.IV.1982, leg. M. Freiburghaus, 2 ex. MHNG. Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 1 ex. MHNG.

Remarks: This species has been redescribed by HARVEY (1988). Probably this species is a synonym of *irrugatus* (Simon, 1899), which was recorded from China by CHAMBERLIN (1930).

Distribution: Southeastern Asia, China (new record), Taiwan, New Guinea, Salomon Islands.

Olpiidae (1 species)

10. *Euryolpium agniae* Redikorzev, 1938

Material: Not seen.

Distribution: Vietnam (locus typicus), China (BEIER 1967).

Neobisiidae (13 species)

11. *Bisetocreagris* sp. A

(Fig. 16)

Material: Shaanxi Prov., E Xian, Mt. Huashan, 1000 m, 9.-11.V.1994, 3 ex. MHNG.

Remarks: In general, the identification of *Bisetocreagris* species is quite doubtful and nearly impossible without a revision. So I avoid in creating new names, even if it seems quite sure that the herein not named material represents undescribed species. A lot of species are described only under a typological point of view without the knowledge of morphological variability or sexual dimorphic pattern. Even the splitting of the old paraphyletic *Microcreagris* in some genera (CURCIC 1983) should be revised. Furthermore, CHAMBERLIN (1930) described 3 species from China (exact localisations doubtful, even China is given with a question mark), which cannot be recognized and which are treated herein as nomina dubia: *Microcreagris lampra* Chamberlin, 1930, *Microcreagris orientalis* Chamberlin, 1930 and *Microcreagris silvestrii* Chamberlin, 1930. See also remarks under 20. *Chinacreagris nankingensis*.

These specimens from the Huashan mountains have the palpal proportions (Fig. 16) similar to *annamensis* (Figs. 14-15), but the patella is significantly shorter. The granulation on the palps is quite weak and can easily be overlooked.

12. *Bisetocreagris* sp. B

(Figs 17-18)

Material: Sichuan Prov., Mt. Emei, 1500 m, 21.IX.1994, 6 ex. MHNG. Sichuan Prov., Mt. Emei, 1800 m, 24.IX.1994, 4 ex. MHNG.

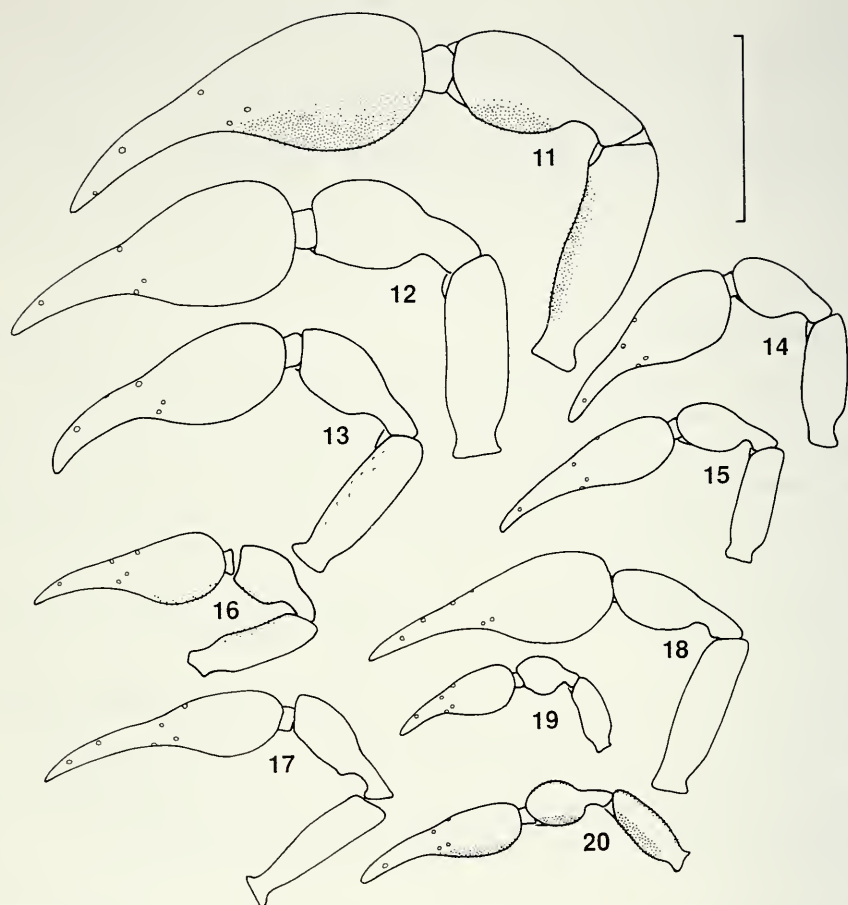
Remarks: These specimens have quite sexual dimorphic palps with a long patella (Figs 17-18), all segments have no granulation.

13. *Bisetocreagris annamensis* (Beier, 1951)

(Figs 14-15)

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 2 ex. ZISB, 2 ex. SMNS 3433. Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 5 ex. MHNG, 2 ex. SMNS 3505.

Remarks: Both series shows no significant differences to material just published from Thailand (SCHAWALLER 1994). Proportions of the sexually dimorphic palps of the Xishuangbanna specimens see Figs 14-15.



FIGS 11-20

Palpal proportions from dorsal, scale 1.0 mm. - 11: *Microcreagris gigas*, SMNS 2893; 12: *Chinacreagris chinensis*, female, SMNS 2895; 13: *Chinacreagris chinensis*, male, SMNS 2894; 14: *Bisetocreagris annamensis*, female, SMNS 3433; 15: *Bisetocreagris annamensis*, male, SMNS 3433; 16: *Bisetocreagris* sp. A, MHNG; 17: *Bisetocreagris* sp. B, male, SMNS 3511; 18: *Bisetocreagris* sp. B., female, MHNG; 19: *Bisetocreagris thailandica*, SMNS 3432; 20: *Bisetocreagris indochinensis*, male, SMNS 3434.

Distribution: Vietnam (locus typicus), Thailand (SCHAWALLER 1994), China (new record).

14. *Bisetocreagris indochinensis* (Redikorzev, 1938)

(Fig. 20)

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 1 ex. ZISB, 1 ex. SMNS 3434.

Remarks: This material is characterized by a distinct granulation on the palpal femur, furthermore the club of the palpal patella is distinctly separated externally from the stick. The palps are sexually dimorphic and somewhat more slender in males (Fig. 20).

Distribution: Vietnam (locus typicus), Thailand (SCHAWALLER 1994), China (new record).

15. *Bisetocreagris kaznakovi* (Redikorzev, 1918)

Material: Not seen.

Distribution: Tibet (locus typicus), Nepal (SCHAWALLER 1987, 1991), Sikkim (1 ex. CGG).

16. *Bisetocreagris thailandica* Schawaller, 1994

(Fig. 19)

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 11 ex. ZISB, 3 ex. SMNS 3432. Yunnan Prov., Kunming, 4.IV.1992, 2 ex. ZISB. Yunnan Prov., Mengleng Tropical Garden, 9.IV.1992, 5 ex. ZISB, 2 ex. SMNS 3438. Yunnan Prov., Mengla-Mengleng, 10.IV.1992, 5 ex. ZISB.

Remarks: The Chinese series show no significant differences to the type series from Thailand. This species is characterized by a relatively small body size, smooth palps and short palpal fingers (Xishuangbanna specimens see Fig. 19) among other characters. The specimens from Kunming, however, have an indistinctly granulated palpal femur.

Distribution: Thailand (locus typicus), China (new records).

17. *Bisetocreagris* cf. *ussuriensis* (Redikorzev, 1934)

Material: Ilin Prov., Mt. Changbai, no date, leg. H.F. Wang, 1 ex. ZISB.

Remarks: This single record from the northeastern province is represented by a tritonymph only, which probably belongs to *ussuriensis* (Redikorzev, 1934). Without having adults a sure identification is impossible.

Distribution: Eastern Siberia (SCHAWALLER 1995), ? China (Ilin, new record).

18. *Chinacreagris chinensis* (Beier, 1943)

(Figs 12-13)

Material: Zhejiang Prov., Mt. Tianmu, 1987-1989, 7 ex. ZISB. Hunan Prov., Mt. Hengshan, 1988-1989, 1 ex. ZISB, 1 ex. SMNS 2894, 1 ex. SMNS 2895. Fujian Prov., Mt. Wuyi, 31.VII.1983, leg. H.F. Wang, 3 ex. ZISB, 1 ex. SMNS 3445. Guizhou Prov., Huaxi, X.1986, leg. G.M. de Rougemont, 7 ex. MHNG, 2 ex. SMNS 3460. Sichuan Prov., Mt. Emei, 1800 m, 24.IX.1994, 3 ex. MHNG.

Remarks: The measurements, the palpal proportions and the smooth palpal femur coincide with the original description. A single specimen (SMNS 2894)

possesses a few tubercles (not an even granulation as in *gigas*) on the palpal femur. The series from Mt. Wuyi is represented by tritonymphs only but could fit to the adults from the other adjacent localities. Proportions of the slightly sexually dimorphic palps of the Mt. Hengshan specimens see Figs 12-13.

Distribution: China (locus typicus: Kiangsu).

19. ***Chinacreagris kwantungensis*** (Beier, 1967)

Material: Not seen.

Distribution: China (Kwangtung)

20. ***Chinacreagris nankingensis*** Curcic, 1983

Material: Not seen.

Remarks: The status of the genus *Chinacreagris* seems doubtful to me, because the separation from *Bisetocreagris* by a somewhat different shape of the flagellum and a somewhat different setation of the abdominal tergites is typological and far away from scientific argumentation (see remarks under 11. *Bisetocreagris* sp. A).

Distribution: China (Kiangsu).

21. ***Microcreagris gigas*** Balzan, 1892

(Fig. 11)

Material: Zhejiang Prov., Mt. Tianmu, 1988-1989, 4 ex. ZISB, 2 ex. SMNS 2893. Hunan Prov., Mt. Hengshan, 1988, 1 ex. ZISB. Sichuan Prov., Wolong Nature Reserve, 1000 m, 24.V.1994, 7 ex. MHNG, 4 ex. SMNS 3512. Sichuan Prov., Wolong Nature Reserve, 1700 m, 18.V.1994, 3 ex. MHNG. Sichuan Prov., Mt. Emei, 1500 m, 21.IX.1994, 2 ex. MHNG.

Remarks: The species, *typus generis* of *Microcreagris*, is redescribed by MAHNERT (1979). The specimen from Mt. Hengshan coincides well by the distinct even granulation, by the measurements and by the distinct epistome, the specimens from Sichuan and from Mt. Tianmu, however, are partly quite smaller (palpal femur 1.2 mm minimum, Fig. 11) and the epistome is reduced. I hope not to fail in considering these differences as infraspecific variations.

Distribution: China.

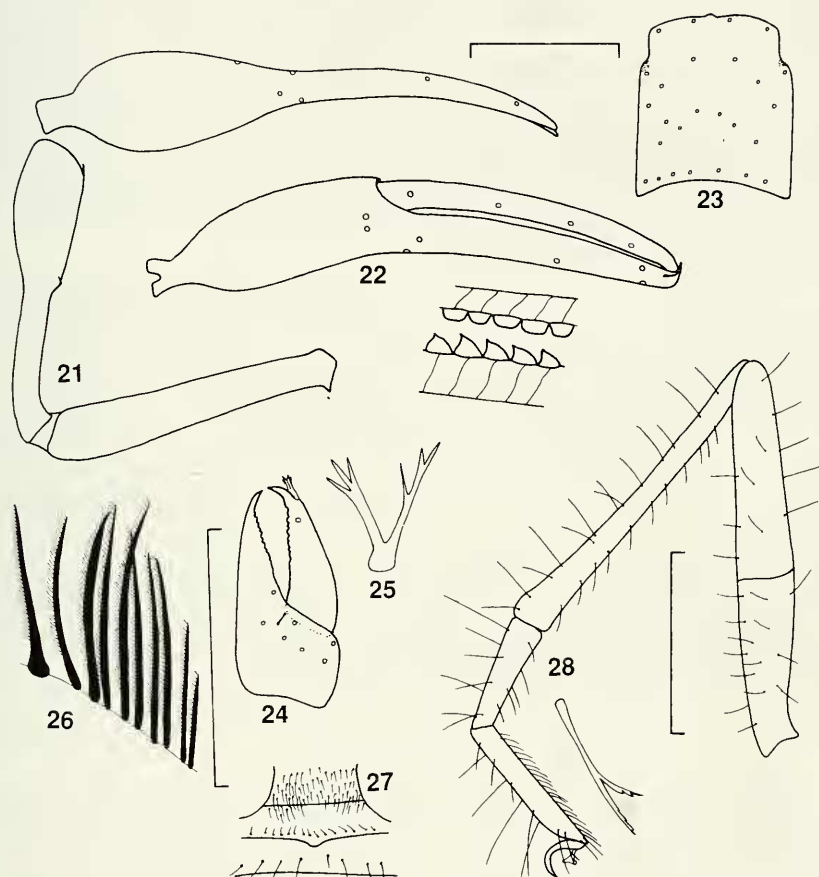
22. ***Stenohya chinacavernicola*** n.sp.

(Figs 21-28)

Holotype (♂): China, Sichuan Prov., Huaying, cave "Dei" (= "Xian Nin"), 1065 m, 17.VIII.1993, leg. "Centro Ybleo Ricerche Speleo-Ydrogeologiche", CGG.

Paratype (♀): China, Sichuan Prov., Huaying, cave "Chao-Tian", 930 m, 18.VIII.1993, leg. "Centro Ibleo Ricerche Speleo-Idrogeologiche", CGG.

Description (♂): Carapace (Fig. 23) smooth, (1.12/1.09 mm) 1.10x longer than wide, epistome rounded and indistinct, a single small eye spot without lense on each side; carapace with 26 setae, anterior margin with 4, posterior margin with 7. Setation



FIGS 21-28

Stenohya chinacavernicola n.sp. holotype male, scales 1.0 mm - 21: Palp from dorsal; 22: Palpal chela from lateral with trichobothriotaxie and dentation in the middle of the fingers; 23: Carapace; 24: Chelicera; 25: Galea from lateral; 26: Flagellum; 27: Setaion around genital opercula, 28: Leg IV IV with subterminal seta.

on tergites 9-8-10-10-12-12-13-14-13-12-10, on sternites x-x-18-18-18-19-18-18-16-10, setation around the genital opercula see Fig. 27. Chelicera (Fig. 24): 7 setae on the hand, movable finger with 1 seta; galea deeply bifurcated, each branch with 3 sub-branches (Fig. 25); flagellum with 10 pinnate blades (Fig. 26); serrula with about 35

blades; both fingers each with about 8 small and rounded teeth. Pedipalp (Figs 21-22): all segments smooth, without granulation; femur (2.04/0.34 mm) 6.0x, patella (2.06/0.44 mm) 4.7x, chela without pedicel (3.30/0.68 mm) 4.86x longer than wide; pedicel of patella as long as club; finger somewhat longer than hand; trichobothriotaxie see Fig. 22, *ist* at the base of the fixed finger, *b* and *sb* separated; both palpal finger with about 120 equal and closely situated teeth, teeth on the fixed finger acute and pointing backwards. Medial process of the palpal coxa with 5+1 long setae. Leg IV (Fig. 28): femur and patella 2.18 mm, tibia 1.95 mm, basitarsus 0.66 mm, telotarsus 0.89 mm long; telotarsus 1.35x longer than basitarsus; subterminal seta bifurcated and with serrate branches. Body length 4.5 mm.

Description (♀): Sexual dimorphism indistinct. Flagellum and galea as in the male. Trichobothriotaxie and setation as in the male. Palpal proportions similar to those in the male: femur (2.02/0.36 mm) 5.7x, patella (1.90/0.40 mm) 4.75x, chela without pedicel (3.00/0.68 mm) 4.4x longer than wide. Body length 4.8 mm.

Discussion: This first cavernicolous species of the genus can easily be separated from the "free" living congeners by the palpal proportions with a long pedicel of the patella, by a relatively high number of setae on the carapace (which might be an adaption to cave life) and mainly by the trichobothriotaxie: *sb* just between *b* and *st* and not close to *b*, *ist* at the base of the fixed finger. This trichobothrial pattern is quite unusual within the genus and it could be necessary to place this species in an own genus after having revised the genus validity around "*Microcreagris*". The number of the flagellar blades seems variable in the genus: for example in *martensi* and *mahnerti* 8, in *hamatus* 7-10 and in *chinacavernicola* n.sp. 10 pinnate blades.

23. *Microbisium brevifemoratum* (Ellingsen, 1903)

Material: Ilin Prov., Mt. Changbai, no date, leg. H.F. Wang, 1 ex. ZISB. Shaanxi Prov., E Xian, Mt. Huashan, 1000 m, 9.-11.V.1994, 9 ex. MHNG, 3 ex. SMNS 3510. Beijing, no date, leg. H.F. Wang, 1 ex. ZISB. Beijing, 18.IX.1985, leg. H.F. Wang, 2 ex. SMNS 3443.

Remarks: These Chinese specimens show no differences to eastern Siberian records.

Distribution: Wider distribution in the Palaearctic region from Europe to eastern Siberia including Sakhalin and Kuriles, China (Ilin, Qinling, Beijing, new records).

Cheiridiidae (1 species)

24. *Cheiridium minor* Chamberlin, 1938.

Material: Not seen.

Remarks: The status of this species seems doubtful, probably it is a synonym of *museorum* (Leach, 1817).

Atemnidae (4 species)

25. *Anatemnus orites* (Thorell, 1889)

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 2 ex. ZISB, 1 ex. SMNS 3435. Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 5 ex. MHNG.

Remarks: The species taxonomy within the genus *Anatemnus* is doubtful (SCHAWALLER 1994). This Yunnan material coincides with material from Thailand, which originates from an area close to the locus typicus of *orites* (Burma).

Distribution: Burma (locus typicus), southeastern Asia, China (new record).

26. *Atemnus politus* (Simon, 1878)

Material: Not seen.

Distribution: Widely distributed in the Palaearctic region, known also from Mongolia, Bhutan and China (BEIER 1967 sub *turkestanicus*).

27. *Diplotemnus insolitus* Chamberlin, 1933

Material: Not seen.

Remarks: *Miratemnus piger sinensis* Schenkel, 1953 is transferred by HARVEY (1990) to *Diplotemnus ophthalmicus* Redikorzev, 1949, which is synonymized by DASHDAMIROV & SCHAWALLER (1993) with *insolitus* Chamberlin, 1933.

Distribution: Wider distribution in the Palaearctic region from Algeria to Middle Asia, Sudan, Himalayas (locus typicus of *insolitus*) and China ("Süden des Ordos", localisation ?).

28. *Paratemnoides sinensis* (Beier, 1932)

Material: Not seen.

Distribution: China (Kwangtung).

Cheliferidae (6 species)

29. *Dactylochelifer gansuensis* Redikorzev, 1934

Material: Not seen.

Distribution: China (Kansu).

30. *Eremochernes secundus* Beier, 1937

Material: Not seen.

Remarks: This genus belongs to the Cheliferidae near *Rhacochelifer* (BEIER 1973) and includes 2 species (*gracilipes* Redikorzev, *secundus* Beier) from Mongolia

and northwestern China respectively. *Eremochernes tropicus* Beier, 1967 from Thailand and Sichuan is transferred herein provisionally to the chernetid genus *Allochernes* Beier, 1932 (see 36.).

Distribution: China (Liaoning).

31. **Lophochernes gracilis** Beier, 1943

Material: Not seen.

Distribution: China (Fujian).

32. **Lophochernes tibetanus** Beier, 1943

Material: Not seen.

Distribution: Tibet.

33. **Macrochelifer tibetanus** (Redikorzev, 1918)

Material: Not seen.

Distribution: China (Chinghai).

34. **Sinochelifer kwantungensis** Beier, 1967

Material: Not seen.

Distribution: China (Kwangtung).

C h e r n e t i d a e (10 species)

35. **Allochernes asiaticus** (Redikorzev, 1922)

Material: Not seen.

Distribution: Middle Asia, Nepal, Tibet.

36. **Allochernes tropicus** (Beier, 1967) n.comb.

Material: Sichuan Prov., Xiangcheng County, 2800 m, 7.VII.1982, leg. H.F. Wang, 1 ex. SMNS 3459.

Remarks: This single male coincides well with the description of *tropicus* Beier, 1967 (sub *Eremochernes* Beier, 1932), concerning for example the proportions of the palps and in having 3 flagellar setae, the serrula with 19 lamellae (description: 22), the tarsus IV distally with a tactile seta and the palpal chela with several accessory teeth. However, *Eremochernes* (see 30.) belongs to the Cheliferidae (BEIER 1973), thus *tropicus* must be transferred to a chernetid genus. Because of the unsatisfactory taxonomic situation concerning the genus separation in this family,

tropicus Beier, 1967 can be assigned only provisionally to the genus *Allochernes* Beier, 1932. The presence of a tarsal tactile seta is quite "unusual" among the congeners, but *Allochernes liwa* Harvey, 1988 from Sumatra also possesses such a seta.

Distribution: Thailand, China (Sichuan).

37. **Chernes hahni** (Koch, 1873)

Material: Beijing, no date, leg. H.F. Wang, 2 ex. ZISB, 1 ex. SMNS 3441.

Remarks: This series shows no differences in the palpal proportions, the setation, the granulation and in the form of the galea to European and eastern Siberian specimens.

Distribution: Europe, Caucasus, northern Iran, Kazakhstan, Siberia, Sakhalin, China (Beijing, new record).

38. **Chernes sinensis** Beier, 1932

Material: Not seen.

Remarks: The status of this species seems doubtful. The description point to a short tactile seta on the tarsus IV, which is unusual for *Chernes* but characteristic for *Dinocheirus*.

Distribution: China (Kwangtung).

39. **Lamprochernes savignyi** (Simon, 1881)

Material: Guizhou Prov., Huaxi, X.1986, leg. G.M. de Rougemont, 1 ex. MHNG.

Distribution: Cosmopolitan, China (new record).

40. **Megachernes himalayensis** (Ellingsen, 1914)

Material: Not seen.

Distribution: Himalayas, China (Sichuan, BEIER 1932 sub *sinensis*).

41. **Megachernes cf. himalayensis** (Ellingsen, 1914)

Material: Guangxi Prov., Contea Gongcheng, cave "Hei Yan", VIII.1994, leg. R. Zorzin, 1 ex. MSNV.

Remarks: This single male is very similar in many characters (specially palpal proportions) to the few specimens which I know from the Himalayas. However, the body is somewhat smaller, the last coxa is not swollen and the setation on the tergites and sternites is somewhat different, so probably we face a different (? new) species. Without having both sexes and without a revision of the Asian congeners I avoid in

describing this form/species. In this connection it should be checked in the type material if *sinensis* Beier, 1932 is really a synonym of *himalayensis* (Ellingsen, 1914).

Distribution: see 40.

42. *Megachernes* cf. *titanius* Beier, 1951

Material: Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 3 ex. MHNG, 1 ex. SMNS 3506.

Remarks: This series consists of 1 male and 3 females, which are somewhat smaller (body length about 4 mm) than noted in the description of *titanius* (δ 4.5 mm, ♀ 5 mm), but distinctly bigger than *himalayensis*. Both sexes show no distinct dimorphism concerning the setation on the carapace and the palps but a distinct dimorphism concerning the proportions of the palpal patella and fingers. The palpal patella in males is round and thick (as figured in the original description) and in females distinctly more slender; the fingers are somewhat longer in females than in males.

Distribution: Vietnam, China (new record).

43. *Megachernes* cf. *vietnamensis* Beier, 1967

Material: Hubei Prov., Xing Shan, cave "Da Dang", 1992, leg. J. Lips, 1 ex. MHNG. Hubei Prov., Yishang, cave "Cygne", 1992, leg. J. Lips, 1 ex. MHNG. Sichuan Prov., Huaying, cave "Chao-Tian", 930 m, 18.VIII.1993, leg. "Centro Ibleo Ricerche Speleo-Idrogeologiche", 1 ex. CGG.

Remarks: *Megachernes vietnamensis* is significantly different from the congeners by its slender palps (in particular the femur) without distinct sexual dimorphism. The above listed specimens also possess such slender palps, but the palpal hand is somewhat more convex both on the lateral and on the medial side. Without further material it seems impossible to decide, whether this is a infraspecific variation or a character for separating different biospecies.

Distribution: Vietnam, China (new record).

44. *Verrucachernes oca* Chamberlin, 1947

Material: Yunnan Prov., Xishuangbanna, IV.-VII.1993, 2 ex. ZISB, 1 ex. SMNS 3436. Yunnan Prov., Mengyang Nature Reserve, 500 m, 10.-14.IX.1994, 10 ex. MHNG. Sichuan Prov., Wolong Nature Reserve, 1700 m, 18.V.1994, 5 ex. MHNG, 2 ex. SMNS 3503.

Remarks: The species is redescribed by HARVEY (1988). Probably, *Pselapho-chernes indicus* Beier, 1974 is a synonym of *Verrucachernes oca*, at least the material which I recorded from Nepal (SCHAWALLER 1991) and Thailand (SCHAWALLER 1994) belongs to *Verrucachernes oca* and shows no differences to the new Chinese records.

Distribution: Wide distribution in southeastern Asia, China (new record), New Guinea, Solomon Islands.

Withiidae (3 species)

45. *Hyperwithius tonkinensis* Beier, 1951

Material: Sichuan Prov., Mt. Emei, 1700 m, 23.IX.1994, 1 ex. MHNG, 1 ex. SMNS 3507.

Remarks: This genus contains 3 "species": *annamensis* (Redikorzev, 1938), *dawydoffi* Beier, 1951 and *tonkinensis* Beier, 1951, which are mainly separated by the proportions of the palps and the setation on tergites and sternites. This might be only a typological separation, furthermore variability of the characters is unknown. The above listed 2 females fit quite well with the description of *tonkinensis*, based on 1 female and 1 male. In comparison with *Metawithius spiniventer*, which can be expected also in that region, the congeners of *Hyperwithius* are smaller, the form of the carapace is different and the trichobothrium on tarsus IV inserts somewhat distally and not just in the middle of the tarsus.

Distribution: Vietnam, China (new record).

46. *Withius pekinensis* (Balzan, 1892)

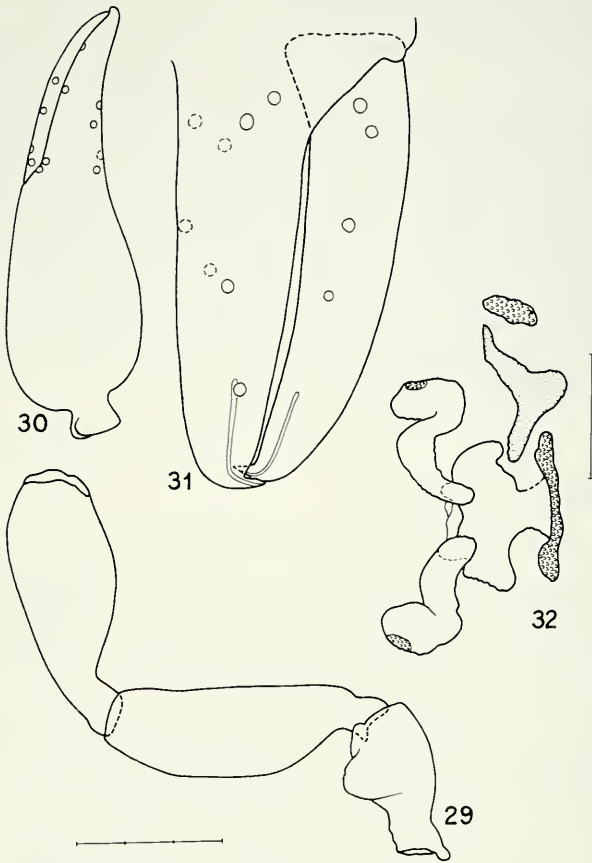
(Figs 29-32)

Material: China, Peking, 1 ♀ (holotype) MSF.

Description (by V. Mahnert): Carapace coarsely granulate (0.69/0.49 mm), 1.4x longer than wide, with 2 distinct transverse furrows, 2 eyes present; setae of carapace and tergites clavate, mostly broken; tergites and sternites divided, tergal chaetotaxy not noted; setation of half-sternites 4/5-4-7-6/7-7-8-7-6, with 2 and 3 suprastigmal setae and 1 anterior lateral seta, a few sensory (?) setae present: VI 1, VII 2-3, VIII 2, IX 1 (?); anterior genital operculum with 12 setae. Spermatheca (Fig. 32) with paired short tubes. Chelicera: 5 setae on the hand (*db* and *ib* dentate), movable finger with 1 seta, galea broken (on both fingers), serrula with 16 blades, flagellum with 4 setae, fixed finger with 3 teeth, movable finger with cone-like subapical lobe. Pedipalp (Fig. 29): all segments granulate; trochanter with pointed dorsal hump, femur (0.55/0.18 mm) 3.0x, patella (0.55/0.21 mm) 2.7x, chelal hand with pedicel (0.54/0.28 mm) 1.9x longer than wide and 1.35x longer than finger, length of finger 0.40 mm, chela with pedicel (length 0.88 mm) 3.1x longer than wide; trichobothriotaxie see Figs 30-31, *ist* dorsal, *it* internal. Leg I: femur (0.13/0.12 mm) 1.0 x, patella (0.27/0.11mm) 2.3x longer than wide and 2.1x longer than femur, tibia (0.27/0.07 mm) 3.7x, tarsus (0.24/0.05 mm) 4.7x longer than wide; leg IV: femur and patella (0.51/0.17 mm) 3.0x, tibia (0.41/0.10 mm) 4.1x, tarsus (0.30/0.06 mm) 4.7x longer than wide; all setae broken, arolia broken, claws smooth.

Remarks: The trichobothrial pattern and the pedipalpal measurements are quite similar to those of *Withius piger* (Simon, 1878), but the spermatheca seems to be different. Males should be available before the specific identity of this species can be established.

Distribution: China (Hopeh).



FIGS 29-32

Withius pekinensis, holotype female, scales 0.3 mm (29, 30), 0.1 mm (32). - 29: Palp from dorsal; 30: Palpal chela with trichobothriotaxie; 31: Palpal fingers; 32: Spermatheca.

47. *Withius piger* (Simon, 1878)

Material: Not seen.

Distribution: Cosmopolitan, China (Kwangtung).

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